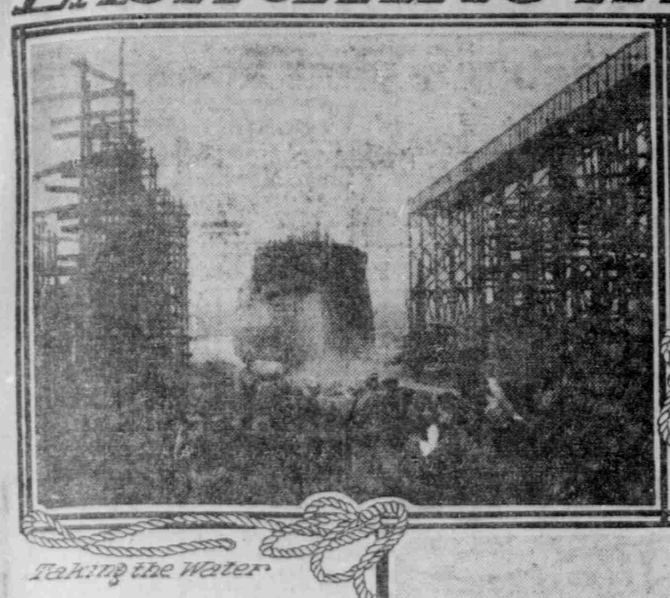
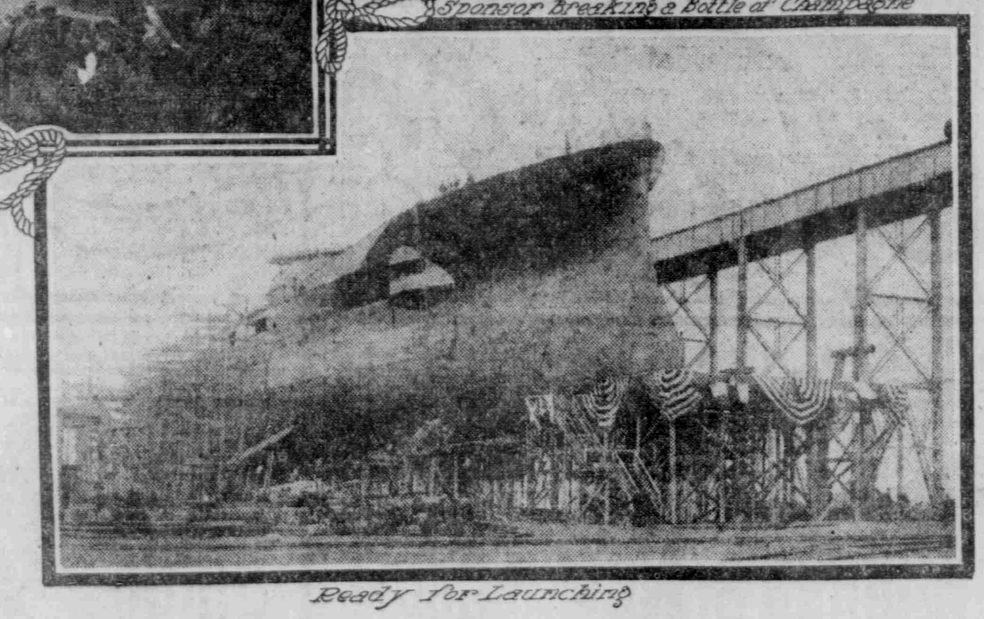
LAUNCHING A BATTLESHIP



Taking the Water

Sponsor Breaking a Bottle of Champagne



Ready for Launching

OF the thousands who frequently gather at a shipyard to see a battleship launched few realize that with the increase in the size of these floating fortresses the placing of them into the water from the blocks on which they are built calls for a science and the solution of engineering problems of great magnitude.

"The launching was a great success," say the press reports of the initial dip of a huge ship, but few reporters have ever chronicled the feelings of the chief officers of the company as the great mass of steel starts slowly and then slips swiftly down the ways.

That is the most critical time in the whole construction of the vessel, the most critical time in the very life of the vessel and, indeed, the most critical time in the minds of those who are responsible for the delivery of the ship to the government.

And that time—scarcely more than a minute, during which the ship moves not more than about 400 feet—seems like an age, and not until the ship, with an almost human-like courtesy, has slipped from the ways, made her dip of the bow and is off in the river, do the strained, anxious expression leave the faces of the officials to be replaced with smiles, as congratulations are showered upon them.

A modern battleship is about 575 feet long and upon this length rests a weight of approximately 8,000 tons. This vast weight must be distributed so that it is equalized along every inch. As large and as strong as a battleship may seem, it is, indeed, a weakling when on the ways or when not perfectly water-borne. Not a fraction of an inch can it be permitted to bend else it is liable to crinkle up in a hopeless mass of twisted metal.

In the voyage down the ways to the water there must be no jarring and, once started, there must be no stopping, else there is danger that the ship will turn on her side. There have been launchings when the ships have struck bottom with their sterns at the end of the ways, or, by reason of insufficient momentum, failed to clear the ends, and causing much apprehension until the craft have been dragged off by tugs.

The builders of American naval craft have not had nearly the trouble at launchings that has been experienced by some of the European yards, at which ships have been badly damaged. Indeed, not so many months ago an Italian ship, the moment she reached the water, turned turtle.

This, in a measure, was due to the faulty design of the vessel or the putting in of too much weight, but at the same time it is said that there was some fault to be found with the launching ways.

In the building of small craft the builders have but little difficulty in putting them overboard, and it has been customary in the Maine shipyards to launch 3,000 and 4,000 ton schooners fully equipped and ready to go to sea.

Nor are all ships launched stern first. At some places the waterway is too narrow to permit this, and the vessels are launched sidewise. The steamer Great Eastern, a ship that for years ranked as the largest vessel ever built, was sent overboard sideways, and today on the great lakes the shipyards launch 500-foot cargo carriers in that manner and think nothing of it. These vessels, for all their size and immense cargo capacity, are scarcely to be compared to one of the big fighting ships, like the Delaware or the North Dakota, for they not only weigh so much more, but the weight is so much more concentrated.

Before such a monster ship is even begun the builder considers how the vessel is to be launched. The very ground over which the ship is to be built receives a course of special treatment to prepare it for the vast weight it must support.

Rigidity is the keynote and the foundation is usually prepared by driving hundreds of long piles into the earth, filling in between with concrete until the area is perfectly unyielding. Then the ground is gently sloped and everything is then ready for the building of the ship.

When the hull is well advanced on the keel blocks that have been laid with mathematical precision, the attention of the yard turns to the preparation for launching. The ways on which the vessel slides to the water are slight in appearance when compared to the towering hull, but they are far stronger than they seem.

The ways consist of two pieces, known as the "groundways" and "sliding ways," and are extremely simple in construction, though they necessitate the greatest care in putting down for they must be absolutely true.

The groundways are laid out first. They consist of lengths of timber and make platforms about three feet wide that extend from some little distance beyond the edge of the water to the bow of the ship, on either side, being nothing more than tracks.

On these tracks are placed the sliding ways, which are also long pieces of timber built up of many smaller pieces, as is the groundways, but the sliding ways are in two parts, upper and lower courses. When the ways have been fitted they are taken apart, oiled and permitted to season while waiting for the ship to progress more toward completion.

Just a week or so before the ship is to be sent overboard the ways are placed under her. The groundways are carefully planed, each of the huge timbers about 16 inches square, is lapped over the other in the direction the ship will move, then barrel after barrel of grease made of tallow, soap fat and oil is smeared on the ways.

The grease is necessary to make the ways slip over each other easily and it is not infrequent when one of the large battleships is launched that as much as 9,000 pounds of this grease is used. The grease is spread to a thickness of an inch or more on the groundways and then the sliding ways are placed on top of them.

Between the lower and upper courses of the sliding ways are placed, every few inches apart, hundreds of long oak wedges. On top of the upper course of the sliding ways is then built the cradle, which is a series of built-up forms of timber to conform with the shape of the underbody of the ship and which is bound to the vessel by ropes leading under the keel.

Just beneath the bows of the vessel the lower course of the sliding ways extends beyond its over course and makes up what is known as the sole pieces, which are firmly bolted to the groundways.

Bright and early on the morning of the launching the entire force of the shipyard is concentrated upon the vessel. All of the hundreds of pieces of timbers that hold the ship up, known as "shores," are knocked down, much of the staging on which the platers worked is removed and the vessel stands out gaunt and, apparently, unsupported, awaiting the signal.

Launching is usually a fete day, despite its serious side, and, on invitation of the builders hundreds of prominet citizens, statesmen and army and navy officers assemble at the yard. In the center of this gathering is the sponsor for the ship, a young lady who has been selected by the governor of the state for which the ship will be named.

With her arms filed with a huge bunch of roses she and the launching party is escorted to the platform which has been especially built around the bow of the ship. While the party is gathering on the stand the sponsor is being coached by one of the shipyard people.

This coaching is also as necessary a part to a successful launching as is the mechanical end for, despite modern times, there is considerable superstition regarding ships, and were a ship to be launched and the traditional bottle of wine be not broken over the bow, then it is conceded that that ship is not to be lucky.

At a launching a few years ago the sponsor, despite the coaching, suffered from stage fright at the crucial moment, and although she called out: "I christen thee ——" loudly enough, she failed to strike with the bottle and it slipped from her hands.

The bottle, however, was suspended from a line from the base of the Jack staff on the bow and as the ship slipped down the ways the unbroken bottle dangled against her side. Halfway down the ways a lynx-eyed workman on the ground spied it.

"Hey, Mike," he cried to a workman standing near the Jack staff, "she didn't break the bottle; bust it!" and Mike hauled up the string and smashed the beribboned receptacle over the nose of the ship as her stern struck the water, thus saving the reputation of the yard and the good name of the ship.

While the shipyard official is instructing the sponsor in regard to her duties the order has been given to "Wedge up." Scores of men, with mallets and battering rams of timber then begin driving in the oak wedges between the two courses of the upper sliding ways.

"Clatter, clatter, clatter," resound the hammers, making a noise like a dozen gatling guns as inch by inch the wedges are driven home, and then comes the most remarkable part of the process of launching, for these little wedges literally lift the huge mass of steel from the keelblocks and the entire weight rests up the upper course of the sliding ways supported by the wedges.

In the driving home of these wedges system is employed, for as the various gangs batter away foremen hurry here and there and watch with critical eye to see that no set of the wedges is driven in quicker than another. On both sides of the ship the wedges are driven in at the same moment so that there is an equal distribution of the weight at all times.

When the wedges have been driven in sufficiently far and the keel of the ship is clear of the blocks a gang of men is sent under the hull to remove the top blocks so as to prevent the possibility of one of them being caught in anything.

Finally the foremen make a hurried trip under the ship and around the ways to see that all is clear, and then the great chains that have been placed around the sliding and groundways to assist the sole pieces in holding, are removed.

The ship then stands held on the ways by only the timber sole pieces. Two gangs are selected and with long saws each stand by a sole piece. The word is given and the saws are started. "Swish, swish, chee, chee," sing the saws, the noise ringing out clear in the silence prevailing. Every one stands breathless. The sponsor clutches her bottle nervously, the shipyard officials' faces are strained and every

Suddenly there is a sharp, ripping noise as though a bolt of canvas had been rent asunder. It is the tearing of the fibers of the sole pieces. Then follows a hard, grinding snap, the sole pieces have parted, and with a scarcely perceptible movement, the great ship starts.

"There she goes!" yells a hundred voices and before the last word is out the vessel has quickened her motion until all can see. The sponsor gasps: "I name thee ——," gives the bottle a wild fling, it strikes the steel prow of the ship and breaks with a crash, its liquid contents spread out over the metal and usually the launching party.

Foot by foot as the vessel moves down the ways it gathers headway and its stern takes the water with a great splash, dipping deep but only to rise a moment later when the bouyancy come into play, while the stem, in turn drops from the ways to the water and dips as if acknowledgeing the cheers from the throngs ashore and the hooting of dozens of whistles on tugboats and yachts.

As the vessel slides into the stream her headway is gradually checked until she is at a standstill and she is then taken in charge by tugs and towed to a berth. In the checking of the headway of the launched vessel an ingenious plan is sometimes adopted. In some places the water is not sufficiently wide to permit the vessel to go free to stop of her own accord, so the plan followed is to place anchors at the edge of the shore and then lead the chains to the bow of the ship.

Rope cables are then led around the stern of the ship and form a bridle, the ends leading to the anchor chains. Smaller lines are distributed here and there to cleats on deck and the other ends to the anchor cables. As the ship strikes the water the strain falls on the lighter lines, which give way, one after the other.

Each successive line is heavier than the other, however, from four to five inches in diameter, is broken, the headway, or sternway, of the ship has been pretty well lost and the checkup by the anchor chains follows without any great strain.

Following the launching come the congratulations to the builders, and well they deserve them, for they have just undergone a fearful strain. But the ship safely launched, anxiety is forgotten, the launching party assembles at a luncheon, there is something to eat, music and much speaking, without which no launching could be complete.